Shri Shankaracharya Technical Campus, Bhilai

(An Autonomous Institute Affiliated to CSVTU Bhilai)

Scheme of Teaching & Examination (Effective from 2020-2021 Batch)

B. Tech. (Information Technology) Seventh Semester

Sl. No.	Board of Studies (BOS)	Courses	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
				L	T	P	Theory/Lab				
							ESE	CT	TA		
1	Information Technology	Principles of Management	IT106701	3	-	-	100	20	30	150	3
2	Information Technology	UHV-II	IT106702	3	-	-	100	20	30	150	3
3	Information Technology	Project Planning & Management	IT106703	2	1	-	100	20	30	150	3
4	Information Technology	Professional Elective-III (Refer Table IV)	IT106721	2	1	-	100	20	30	150	3
5	Information Technology	Open Elective-II (Refer Table V)	IT106741	3	-	-	100	20	30	150	3
6	Information Technology	Soft Computing Lab (Android Lab)	IT106791	-	-	2	25	-	25	50	1
7	Information Technology	Virtual Lab (Hadoop)	IT106792	-	-	2	25	-	25	50	1
8	Information Technology	Capstone Project Phase-1	IT106793	-	-	4	50	-	50	100	2
9	Information Technology	Internship assessment (Report & Seminar)	IT106794	-	-	2	-	-	25	25	1
10		Innovative & Entrepreneurial Skills	IT106795	-	-	-	-	-	25	25	-
Total				**13**	**2**	**10**	**600**	**100**	**300**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b) The duration of end semester examination of all theory papers will be of three hours.

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Table-IV (Professional Elective-III)

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credits
1	**Information Technology**	**Enterprise Resource Planning**	**IT106721**	**3**
2	Information Technology	Natural Language Processing	IT106722	3
3	Information Technology	Soft Computing	IT106723	3
4	Information Technology	Decision Support System	IT106724	3
5	Information Technology	Relational Database Managment System	IT106725	3
6	Information Technology	Real Time Operating Systems	IT106726	3

Table -V [Open Elective Course -II]

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credits
1	**Information Technology**	**Introduction to Data Science**	IT106741	**3**
2	Information Technology	E-Commerce & strategic IT	IT106742	3

SYLLABUS

B.TECH. (INFORMATION TECHNOLOGY)

SEVENTH SEMESTER

Shri Shankaracharya Technical Campus, Bhilai

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Subject Code :- IT106701	Principles of Management	L =3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Evaluate the global context for taking managerial actions of planning, organizing and controlling. 2. Assess global situation, including opportunities and threats that will impact management of an organization. 3. Integrate management principles into management practices.	**CO1:**Describe the primary functions of management and the roles of managers and apply the concepts of PPC. **CO2:** Apply concepts of marketing management and financial management Inventory control. **CO3:** Apply the concept of work study and method study **CO4:**Describe job evaluation and Wages and incentive plans. **CO5:** Describe Human resource management and apply statistical tool in quality control.

UNIT-I: INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS : [CO1]

Definition of Management — Science or Art — Manager Vs Entrepreneur — types of managers - managerial roles and skills — Evolution of Management — Scientific, human relations, system and contingency approaches — Types of Business organization — Sole proprietorship, partnership, company-public and private sector enterprises — Organization culture and Environment — Current trends and issues in Management.**[8Hrs]**

UNIT-II: PLANNING: [CO2]

Nature and purpose of planning — planning process — types of planning — objectives — setting objectives — policies — Planning premises — Strategic Management — Planning Tools and Techniques — Decision making steps and process. **[8Hrs]**

UNIT-III : ORGANISING: [CO3]

Nature and purpose — Formal and informal organization — organization chart — organization structure — types — Line and staff authority — departmentalization — delegation of authority — centralization and decentralization — Job Design — Human Resource Management — HR Planning, Recruitment, selection, Training and Development, Performance Management, Career planning and management**[8Hrs]**

UNIT-IV: DIRECTING: [CO4]

Foundations of individual and group behaviour — motivation — motivation theories — motivational techniques — job satisfaction — job enrichment — leadership — types and theories of leadership – communication — process of communication — barrier in communication — effective communication – communication and IT.**[8Hrs]**

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UNIT-V: CONTROLLING: **[CO5]**
System and process of controlling — budgetary and non-budgetary control techniques — use of computers and IT in Management control — Productivity problems and management — control and performance — direct and preventive control — reporting. **[8Hrs]**

Text Books:

S.No.	Title	Authors	Publisher
1	Principles of Management	Openstax, David S. Bright	Anastasia H. Cortes

Reference Books:

S. No.	Title	Authors	Publisher
1	Principles of Management 3.0	Talya Bauer, Jeremy Short	Berrin Erdogan

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Subject Code :- IT106702	UHV-II	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings 2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way. 3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature	**CO1:** The students are able to see that verification on the basis of natural acceptance and experiential validation through living is the only way to verify right or wrong, and referring to any external source like text or instrument or any other person cannot enable them to verify with authenticity; it will only develop assumptions. **CO2:** The students are able to see that their practice in living is not in harmony with their natural acceptance most of the time, and all they need to do is to refer to their natural acceptance to remove this disharmony. **CO3:** The students are able to see that lack of right understanding leading to lack of relationship is the major cause of problems in their family and not the lack of physical facilities in most of the cases, while they have given higher priority to earning of physical facilities in their life ignoring relationships and not being aware that right understanding is the most important requirement for any human being. **CO4:** Understanding the harmony in the Nature. **CO5:** Ability to utilize the professional competence for augmenting universal human order

B. Tech. (Information Technology) Seventh Semester

UNIT-I Course Introduction - Need, Basic Guidelines, Content and Process for Value Education : [CO1]

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

[8 Hrs]

UNIT-II: Understanding Harmony in the Human Being-Harmony in Myself!: [CO2]

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'

11. Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Swasthya - Practice Exercises and Case Studies will be taken up in Practice Sessions **.[8 Hrs]**

UNIT-III Understanding Harmony in the Family and Society- Harmony in Human Relationship : [CO3]

13. Understanding Harmony in the family – the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship
15. Understanding the meaning of Vishwas; Difference between intention and competence
16. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha)- from family to world family! - Practice Exercises and Case Studies will be taken up in Practice Sessions . **[8Hrs]**

UNIT-IV: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence : [CO4]

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence - Practice Exercises and Case Studies will be taken up in Practice Sessions . **[8Hrs]**

UNIT-V Implications of the above Holistic Understanding of Harmony on Professional Ethics : [CO5]

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics:

a) Ability to utilize the professional competence for augmenting universal human order
b) Ability to identify the scope and characteristics of people-friendly and ecofriendly production systems,
c) Ability to identify and develop appropriate technologies and management patterns for above production systems.

27. Case studies of typical holistic technologies, management models and production systems

28. Strategy for transition from the present state to Universal Human Order: a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers b) At the level of society: as mutually enriching institutions and organizations **. [10 Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	A foundation course in Human Values and professional Ethics,	R.R Gaur, R Sangal, G P Bagaria	Excel books, New Delhi

Reference Books:

S. No.	Title	Authors	Publisher
1	A foundation course in Human Values and professional Ethics,	R.R Gaur, R Sangal, G P Bagaria	Teachers Manual, Excel books, New Delhi

Subject Code: IT106703	Project Planning & Management	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Projects are non-recurring activities requiring a different set of skill for planning as compared to regular and operative activities. 2. The course is aimed at developing the understanding of project activities and relevant skills.	**CO1:** Understand the current state of the project management profession. **CO2:** Apply project management tools and techniques. **CO3:** Understand project management terminology with a focus on the PMI PMBok. **CO4:** Explore the appropriate methods to initiate, plan, execute, control and close projects. **CO5:** Basic knowledge of the leading software for Project Planning and Analysis

UNIT-I: **[CO1]**

Project Identification Analysis: Socio-economic Consideration in Project formulation; Social Infrastructure Projects for Sustainable Development; Investment Opportunities; Project Screening and Presentation of Project of Decision Making; Expansion of Capacity; Diversification. **[8 Hrs]**

UNIT-II: **[CO2]**

Market and Technical Analysis: Market and Demand Analysis—Market Survey, Demand forecasting, Uncertainties in Demand forecasting; Technical Analysis-Product Mix, Plant Capacity, Materials and Inputs, Machinery and Equipment.**[8 Hrs]**

UNIT-III : **[CO3]**

Project Costing and Finance: Cost of project; Cost of production; Break even Analysis; Means of Financing Project; Tax Aspects in Project Finance; Role of Financial Institution in Project Finance. **[8Hrs]**

UNIT-IV: **[CO4]**

Project Appraisal: Time Value of Money; Project Appraisal techniques—Playback Period, Accounting Rate of Return, Net Present Value, Internal Rate of Return, benefit Cost Ratio; Social Cost Benefit Analysis; Effective Rate of Protection. Risk analysis: measures of Risk; Sensitivity Analysis; Stimulation Analysis; Decision Tree Analysis.**[8Hrs]**

UNIT-V : **[CO5]**

Project Scheduling/Network techniques in Project management: CMP and PERT Analysis; Float

times; Crashing of Activities; Contraction of Network for Cost Optimization, Updating; Cost Analysis of Resources Allocation. Basic knowledge of the leading softwares for Project Planning and Analysis.**[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Project management and Appraisal,	Khatua	ISBN: 9780198066903, Oxford University Press.
2.	Project management-Strategic Financial Planning Evaluation and Control,	Bhaves, M. Patel	Vikas Publishing House Pvt.Ltd.

Reference Books:

S. No.	Title	Authors	Publisher
1	Projects.	Chandra, P.	Tata McGraw Hill
2.	Effective Project Management.	Wysocki, Robert K., Bick Robert and Crane Davide B	John Wiley and sons USA.

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Subject Code: IT106791	Soft Computing Lab (Android Lab)	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	25	00	25	50	24Hrs

Course Objective	Course Outcomes
1. Understanding the working of Android applications 2. To learn how to create GUI and handle events in Android applications. 3. Understanding development of applications with data storage, APIs and Databases	Once the student has successfully completed this course, he/she will be able to answer the following questions or perform following activities: **CO1:** Understands basic concepts and technique of developing applications for the Android phone. **CO2:** Able to use the SDK and other development tools. **CO3:** Acquaintances with how to publish Android applications to the Android Market. **CO4:** To learn how to create GUI and handle events in Android applications. **CO5:** Understanding development of applications with data storage, APIs and Databases

Suggested List of Experiments (but should not be limited to)

1. Download and setup Android Environment
2. Using the Development environment
   a. Create a new Project using wizard
   b. Add source and resource files.
   c. Import existing projects into workspace
   d. Create testing Emulator
   e. Compile and run the project
   f. Debug the project
   g. Debug on android device.
3. XML Files
   a. AndroidManifest.xml
   a.i. Edit the manifest and change min sdk and target sdk of application.
   a.ii. Add main activity entries in manifest.
   a.iii. Add second activity entries in manifest.
   a.iv. Add Entries for Service, Broadcast receivers.
   a.v. Add uses permissions for reading files, internet, camera.
   b. Layouts
   b.i. Create Linear Layout in xml
   b.ii. Create Relative Layout in xml
   b.iii. Create frame layout in xml
   b.iv. Create a complex mixed layout using all above layouts

c. Drawables
c.i. Create xml drawable for rectangular, oval and other basic shapes
c.ii. Create xml drawable with Layer list for complex shapes.
d. Values
d.i. Create strings.xml to store all your application strings.
d.ii. Create color.xml to store all your color values
d.iii. Create styles.xml to store all your custom themes and style objects
e. Alternate resources based on qualifiers
e.i. Create separate drawables folders and xml files based on screen density (LDPI, MDPI, HDPI, XHDPI, XXHDPI)
e.ii. Create separate styles.xml based on different android versions.
e.iii. Create separate layout folders based on device screen sizes and orientations.

4. Creating User Interface
   a. Create application with Basic Views (Textview, Button, ListView)
   b. Create application with different Layouts (Linear, Relative, Frame)
   c. Create application to handle and respond on click using Click Listeners
5. Assets and Images
   a. Create application which will access files from Assets folder (Images, sounds, Custom Fonts)
6. Application Fundamentals
   a. Activities
   a.i. Create application with one activity and display a layout created in xml.
   a.ii. Create application which will log all activity lifecycle events using Android log api.
   a.iii. Create application which should be Saving and restoring app state (eg textview text, checkbox checked state)
   b. Intents
   b.i. Create application which will start another activity using intent.
   b.ii. Create an activity which will pass data to second activity using intent.
   b.iii. Create activity which will start second activity and get response back from second activity.
   c. Services
   c.i. Create
7. Content Providers
   a. System provided content providers
   a.i. Create application which can access/modify Contacts of device.
   a.ii. Create application which can access & display Images available on device.
   a.iii. Create application which can access and play Media files (Audio & Video)
   b. Custom Contact providers
   b.i. Create application which will provide some data to other applications using ContentProvider system.
8. Broadcast Receivers
   a. Create application to Listen to following system events using Receivers
   a.i. Incoming SMS
   a.ii. In and outgoing Phone Call
   a.iii. Low Battery
   a.iv. Storage state changed
   b. Create application which will broadcast Custom event to custom Receivers.
9. Create application which will display following Notifications
   a.i. Toast notification
   a.ii. Status bar notification

a.iii. Dialog notification
10. Preference & Data Storage
a. Create application which will save and read back data using Shared Preference
b. SQLite database
b.i. Create app to create database using Open helper
b.ii. Create app to read, write and delete database entries
11. Networking & Web API
a. HTTP connectivity
a.i. Create app to connect and fetch data from a Http server/ website using URLConnection
a.ii. Create app to connect and fetch data from a Http server/ website using HTTPClient library
a.iii. Create app to connect and post data to Http server/ website using URLConnection
a.iv. Create app to connect and post data to Http server/ website using HTTPClient library
b. TCP Sockets or Sockets
b.i. Create a server app using tcp socket, it will send "Welcome" to client when its connected.
b.ii. Create a client app using tcp socket, it will send "Hello" to server once connected.
12. Google API
a. Create application using Maps api, it should display marker on current location of user
b. Create application which will display ads using Admob api
13. Accessing android hardware
a. Create Application to take picture and save it to file storage using camera api
b. Create application to display current direction using sensor api
c. Create application to show a toast if phone is waved in air.
d. Create application to show list of paired and nearby bluetooth devices.
14. Facebook SDK
a. Create application which can share link on facebook using Facebook sdk.
b. Create application which can share photo on facebook using Facebook sdk.
15. Publish to playstore
a. Enable Obfuscation for your application using Proguard
b. Export Signed application package
c. Prepare Store listing
d. Upload and publish apk

Reference Books:

S. No.	Title	Authors	Publisher
1.	Head First Android	Jonathan Simon	

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B. Tech. (Information Technology) Seventh Semester

Subject Code: IT106792	Virtual Lab (Hadoop)	L = 0	T = 0	P = 2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	25	00	25	50	24Hrs

Course Objective	Course Outcomes
1. Introduce the tools required to manage and analyze big data like Hadoop, NoSQL 2. Understand Map Reduce Paradigm. 3. Identify various sources of Big data 4. Enable students to have skills that will help them to solve complex real-world problems. 5. Practice programming tools PIG and HIVE in Hadoop eco system.	At the completion of the course a student will be able to – **CO1:** Demonstrate capability to use Big Data Frame works like Hadoop **CO2:** Implement the file management tasks in Hadoop. **CO3:** Program applications using tools like Hive, Pig, NO SQL and MongoDB for Big data Applications **CO4:** Construct scalable algorithms for large Datasets using Map Reduce techniques **CO5:** Enable students to have skills that will help them to solve complex real-world problems.

List of experiments: -

1. Study of Hadoop ecosystem
2. Basic HDFS commands
3. Hadoop File System navigation and manipulation using commands
4. Implement the following file management tasks in Hadoop:
   i. Adding files and Directories ii. Retrieving files iii. Deleting files
5. Implementing simple algorithms in Map- Reduce (3) - Matrix multiplication, Aggregates, joins, sorting, searching etc.
6. Hadoop Programming: Word Count Map Reduce Program
7. Hive shell Writing Basic Hive queries ii) Hive DDL and DML.
8. Using Hive to perform CRUD Operations-Databases, Tables, Views, Functions and Indexes.
9. Use Hive to create, alter, and drop databases, tables, views, functions, and indexes.
10. Practicing pig commands from grunt shell.
11. Writing pig scripts and running them.
12. Processing different datasets using pig.

Reference Books:

S. No.	Title	Authors	Publisher
1.	"Hadoop in Practice"	Alex Holmes	Manning Press, Dreamtech Press
2.	Big Data And Business Analytics Laboratory	Jay Liebowitz	CRC Press

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B. Tech. (Information Technology) Seventh Semester

Subject Code: IT106793	Capstone Project Phase -1	L = 0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	50	00	50	100	24Hrs

Course Objective	Course Outcomes
1. To expose students to the 'real' working environment and get acquainted with the organization structure, business operations and administrative functions. 2. To have hands-on experience in the students' related field so that they can relate and reinforce what has been taught at the university. 3. To promote cooperation and to develop synergetic collaboration between industry and the university in promoting a knowledgeable society. 4. To set the stage for future recruitment by potential employers. 5. To obtain knowledge of how to make optimal decisions to resolve work challenges.	On completion of the course, students will be able to– **CO1:** Participate in the projects in industries during his or her industrial training. **CO2:** Describe use of advanced tools and techniques encountered during training and visit. **CO3:** Interact with industrial personnel and follow engineering practices and discipline prescribed in industry. **CO4:** Acquire practical skills, organizational skills, Communication skills, lifelong learning skills, professional awareness and experience working on projects and alongside industry experts. **CO5:** Write a technical project report that follows an established structure and give oral presentations with focus on the project results and a credible work procedure.

Guidelines for the students: -

1. As per University guidelines, Industrial Training have to be done at the end of 6th Semester.
2. The student must follow the instructions given by the Teacher In-charge of Industrial Training.
3. The purpose of the Industrial Training is to develop the work process being performed and apprise them of the industry problems.
4. During the training, students will be given practical problems by the industry in which they are
5. undergoing training. In case the industry do not give them the problems, the students will themselves formulate problems and carry out detailed study on them and recommend the optimum solution based on their theory knowledge.
5. On completion of training programme, the Project Report must be submitted to Teacher In-charge on the date and time announced.
6. The Project report must include the following:
   (a) The basic history/introduction of the industry.
   (b) The software and hardware used.
   (c) The sequence of operations followed/ systems introduced for the project development.

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(d) The formulation of practical problems.
(e) Data required formulating the problems.
(f) Analysis of the data, steps required and commands used in industry.
(g) Certificate from the industry for the period of training undergone.

7. The student would be evaluated through Report and Viva-voce.

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Subject Code: IT106794	Internship assessment (Report and Seminar)	L = 0	T = 0	P =2	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	-	-	25	25	-

Internship Seminar Evaluation Report

Marks→ / Criteria↓	Excellent (21-25)	Good (16-20)	Average (10-15)	Poor (1-9)
Report (25 Marks)	Documentation in the format provided by the department	Submits on time with more mistakes in the write up	Submits one week late	Submits within two weeks

Marks→ / Criteria↓	5 Marks	4 Marks	3 Marks	2 Marks	1 Marks	0 Marks
Viva-Voce (5 Marks)	Justifies the experimental results and satisfactorily answers all related questions	Justifies the experimental results satisfactorily	Explains the experimental results satisfactorily	Explains the experimental results partially	Understands the experimental results but unable to explain	Unable to understand results of the experiment

MINI PROJECT RUBRICS

	Good	Satisfactory	Poor
Problem Identification, implementation and Report **20 Marks**	**(16 - 20)Marks** • Objectives of the project are clearly stated with proper design specifications and Methodology. • Effective use of design tools • Report written with standardformat	**(10 - 15)Marks** • Objectives of the project are clearly stated; incomplete or improper design specifications and Methodology. • Design tools are not used properly. • Report written with standard format but improper alignment	**(1 - 9)Marks** • Objectives of the project are eithernot defined or not well defined. • Incomplete or improper • Design tools are not known • Report written with no standardformat
Presentation skills **10 Marks**	**(8-10) Marks** • Discipline • Standard PPT Slides • Good Communication skills • Content organization	**(4-7) Marks** • Discipline • Normal PPT Slides preparation • Average Communication skills • Random Content organization	**(1-3) Marks** • No Discipline • No proper PPT Slides preparation • Not able to explain the content • Random Content organization
Viva – Voce **10 Marks**	**(8-10) Marks** • 80% questions answered • 80-100% Accuracy in theanswers • Good knowledge about theProject.	**(4-7) Marks** • 50% questions answered • 50% Accuracy in the answers • Less knowledge about the Project	**(1-3) Marks** • Less than 20% questions answered • No Accuracy in the answers • No knowledge about the Project

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Subject Code: IT106795	Innovative & Entrepreneurial Skills	L = 0	T = 0	P =0	Credits = 0
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	-	-	25	25	-

UNIT-I:
Innovation: innovation- an abstract concept; creativity, innovation and imagination; types of innovation - classified according to products, processes or business organizations.

UNIT-II:
Entrepreneurship: who is an entrepreneur? Entrepreneurship- A state of Mind, Emergence of entrepreneur; Role of Entrepreneur; A Doer not a Dreamer- Characteristics of an entrepreneur; Factors affecting entrepreneurial growth – Social, cultural, personality factors, psychological and Social Factors.Impact of Entrepreneurship for sustainable development.

UNIT-III :
Difference between entrepreneur and entrepreneurship, Difference between entrepreneur and intrapreneur, Common Entrepreneurial competencies/Traits; Entrepreneurship stimulants, Obstacles inhibiting Entrepreneurship; Types of entrepreneurs, Functions of an entrepreneur

UNIT-IV:
Identification of Business Opportunities: Introduction, Sources of Business of Product Ideas, Steps in Identification of Business opportunity and its SWOT Analysis.

UNIT-V :
Techno-Economic Feasibility of the project: Introduction, Techno- Economic feasibility of the Project,Feasibility Report, Considerations while preparing a Feasibility Report, Proforma of Feasibility Report,Role of Institutions and entrepreneurship

Text Books:

S. No.	Title	Authors	Publisher
1	Competing through Innovation-,	Bellon & Whittington	Prentice Hall of India
2.	A Guide to Entrepreneurship	David Oates	JAICO Publishing House

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3.	Entrepreneurship	Rober D Hisrich, Peters, Shepherd	TMH
4.	Entrepreneurship in Action	Coulter	Prentice Hall of India

Reference Books:

S. No.	Title	Authors	Publisher
1	Entrepreneurship Management and Development	Ajith Kumar	HPH
2.	Fundamentals of entrepreneurship	Mohanty	PHI
3.	Patterns of Entrepreneurship	Jack M Kaplan, Wiley	student Edition.

SYLLABUS (Professional Elective-III)

B.TECH. (INFORMATION TECHNOLOGY)

SEVENTH SEMESTER

B. Tech. (Information Technology) Seventh Semester

Table-IV (Professional Elective-III)

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credits
1	**Information Technology**	**Enterprise Resource Planning**	**IT106721**	**3**
2	Information Technology	Natural Language Processing	IT106722	3
3	Information Technology	Soft Computing	IT106723	3
4	Information Technology	Decision Support System	IT106724	3
5	Information Technology	Relational Database Managment System	IT106725	3
6	Information Technology	Real Time Operating Systems	IT106726	3

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B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106721	Enterprise Resource Planning (ERP)	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Understand the technical aspects of ERP systems; 2. Learn concepts of reengineering and how they relate to ERP system; 3. Understand the steps and activities in ERP implementation; 4. Understand the typical functional modules in ERP system; • Understand the technology areas of ERP andenterprise applications.	At the completion of the course a student will be able to, **CO1:** Describe the Basic concepts and technologies used in ERP. **CO2:** Describe ERP package selection process. **CO3:** Describe the process of developing and implementing ERP systems. **CO4:** Identify and describe typical functional modules in ERP system. **CO5:** Explain the different applications of ERP systems.

UNIT-I: **[CO1]**

Definition, Need, Evolution, Benefits, Emerging Trends, Roll of the enterprises, business function and business processes, Risk of ERP, Justifying Investment, Common Myths, Life Cycle, Methodology for Implementation, Cost of Implementation. **[8 Hrs]**

UNIT-II: **[CO2]**

Selection-A Two Step Process, Roles and Responsibilities of Different Project Team Members, Core Team Selection, Consultant Selection, Requirement Gathering Process; BPR: Pros and Cons, Redesign, Reengineering, Benchmarking, Best Practices; Reasons for Gaps and Five Types of Gaps, ERP Project Management, Business Process Modeling and Business Modeling. **[8 Hrs]**

UNIT-III : **[CO3]**

Configuration, testing; Managing ERP Security: Types of Security Issues, System Access Security, Authorizations, Data Security and Technology for Managing Data Security; Data Migration: Migration of Data; Cutover, Go Live preparation; Training: Objective, Strategy, Environment and Technology, Train the Trainer Approach, Delivery, Content Development, Evaluation, Roles; Reasons for Failure of an ERP Implementation, Reasons for Success of ERP Implementation, Change Management**. [8Hrs]**

UNIT-IV: **[CO4]**

Human Capital Management, Financial Management, Procurement and Inventory Management Through ERP, Production Planning and Execution, Supplier Relationship Management Supply Chain Planning, Sales and Service, Quality Management, Logistics Execution: Warehouse and Transport Management, Customer Relationship Management. **[8Hrs]**

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UNIT-V : **[CO5]**

Implementation Issues: Pre implementation issues, financial justification of ERP, evaluation of commercial software during implementation, ERP for industries: ERPs for Auto Industry, ERPs for Pharma, ERPs for Retail, ERPs for Educational Institutions, ERPs for Banks, ERPs for Insurance Companies; Case studies: mySAP Business Suite Implementation at ITC, Oracle ERP Implementation at Maruti Suzuki, Siebel CRM Implementation at Bharti Airtel.**[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Enterprise Resource Planning	Rajesh Ray	Tata McGraw Hill Education
2	ERP Demystified, 2nd Edition	Alexis Leon	Tata McGraw Hill Education

Reference Books:

S. No.	Title	Authors	Publisher
1	ERP, Concepts & Practices	V.K. Garg & N.K. Venkatkrishnan	PHI, 2004.
2	Enterprise Resource Planning	Ashim Raj Singla	Cengage Learning, 2008

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B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106722	Natural Language Processing	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. To understand the concepts of morphology, syntax, semantics and pragmatics of the language. 2. To recognize the significance of pragmatics for natural language understanding 3. To describe the simple system based on logic and demonstrate the difference between the semantic presentation and interpretation of that presentation 4. To describe the application based on natural language processing and to show the points of syntactic,	After successful completion of the course, students **CO1:** Can set up, implement and evaluate natural language technology experiment step by step **CO2:** Will be familiar with a sample of machine learning techniques and can assess which ones are suitable for a given problem. **CO3:** Can explain the interaction between rule based and probabilistic methods in language technology. **CO4:** Can develop NL generation mechanisms. **CO5:** In-depth knowledge of machine translation

UNIT-I: Introduction and syntactic processing: **[CO1]**

The study of Language, Linguistic background, Grammars and Parsing, Features and Augmented Grammars, Grammars for Natural Language, towards efficient parsing, Ambiguity Resolution.**[8 Hrs]**

UNIT-II: Semantic interpretation: **[CO2]**

Semantics and Logical Form, Linking Syntax and Semantics, Ambiguity Resolution, Strategies for Semantic, Interpretation, Scoping and the Interpretation of Noun Phrases. **[8 Hrs]**

UNIT-III : Pragmatics: **[CO3]**

Discourse: Reference Resolution, Syntactic and Semantic coherence, Text Coherence, An Inference based resolution algorithm. Dialogue and Conversational Agents: What makes dialogue different? Dialogue structure and coherence. **[8Hrs]**

UNIT-IV: Natural Language generation: **[CO4]**

Introduction to language generation, architecture for generation, surfacerealization, systemic grammar, functional unification grammar, discourse planning. **[8Hrs]**

UNIT-V : Machine translation: **[CO5]**

Language Similarities and Differences, transfer metaphor, syntactic transformations, lexical transfer, idea of Interlingua, direct translation, using Statistical Techniques **[10Hrs]**

		July 2023	1.00	Applicable for AY 2023-24 Onwards
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Text Books:

S. No.	Title	Authors	Publisher
1	Speech and Language Processing	Jurafsky, D. & Martin, J.H.	
2	Natural Language Understanding,	Allen, J	

Reference Books:

S. No.	Title	Authors	Publisher
1	Foundations of General Linguistics	Atkinson, M, Kilby, D A & Roca, I	
2	An Introduction to Language	Fromkin, V & Rodman, R	
3	Natural Language Processing for Prolog Programmers	Covington, M A	
4	Natural language processing in Prolog: an introduction to computational linguistics	Gazdar, G& Mellish.	

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Subject Code :- IT106723	Soft Computing	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Artificial Intelligence, Various types of production systems, characteristics of production systems. 2. Neural Networks, architecture, functions and various algorithms involved. 3. Fuzzy Logic, Various fuzzy systems and their functions. 4. Genetic algorithms, its applications and advances.	[After undergoing the course, students will be able to:] **CO1:** Fuzzy logic and its applications. **CO2:** Artificial neural networks and its applications. **CO3:** Solving single-objective optimization problems using GAs. **CO4:** Solving multi-objective optimization problems using Evolutionary algorithms (MOEAs). **CO5:** Applications of Soft computing to solve problems in varieties of application domains.

UNIT-I: Introduction: **[CO1]**

Concept of computing systems. "Soft" computing versus "Hard" computing, characteristics of Soft computing, Some applications of Soft computing techniques **[8 Hrs]**

UNIT-II: Fuzzy logic : **[CO2]**

Introduction to Fuzzy logic. Fuzzy sets and membership functions. Operations on Fuzzy sets. Fuzzy relations, rules, propositions, implications and inferences. Defuzzification techniques. Fuzzy logic controller design. Some applications of Fuzzy logic.

Fuzzy rule base system : Fuzzy propositions, formation, decomposition & aggregation of fuzzy Rules, fuzzy reasoning, fuzzy inference systems, fuzzy decision making & Applications of fuzzy logic. **[8 Hrs]**

UNIT-III : Artificial Neural Networks: **[CO3]**

Neural Network: Structure and Function of a single neuron: Biological neuron, artificial neuron, definition of ANN, Taxonomy of neural net, Difference b/w ANN and human brain, characteristic and applications of ANN, single layer network. Perceptron: Perceptron training algorithm, Linear separability Introduction of MLP, different activation functions, Error back propagation algorithm, Applications of ANNs to solve some real life problems. **[8Hrs]**

UNIT-IV: Genetic Algorithms: **[CO4]**

Fundamental, basic concepts, working principle, encoding, fitness function, reproduction, Genetic modeling: Inheritance operator, cross over, inversion & deletion, mutation operator, Bitwise operator ,Generational Cycle, Convergence of GA, Applications & advances in GA, Differences & similarities between GA & other traditional methods. **[8Hrs]**

UNIT-V : Multi-objective Optimization Problem Solving: [CO5]

Concept of multi-objective optimization problems (MOOPs) and issues of solving them. Multi-Objective Evolutionary Algorithm (MOEA). Non-Pareto approaches to solve MOOPs, Pareto-based approaches to solve MOOPs, Some applications with MOEAs.**[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Neural Networks, Fuzzy Logic and Genetic Algorithms: Synthesis & Applications,	S. Rajasekaran, G. A. Vijayalakshami,	PHI
2	Neural Networks and Learning Machines, (3rd Edn.)	Simon Haykin	PHI Learning, 2011

Reference Books:

S. No.	Title	Authors	Publisher
1	Fuzzy Logic: A Pratical approach	F. Martin, , Mc neill, and Ellen Thro	AP Professional, 2000.
2	Genetic Algorithms In Search, Optimization And Machine Learning,	David E. Goldberg,	Pearson Education, 2002.

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B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106724	Decision Support System	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. To review and clarify the fundamental terms, concepts and theories associated with Decision Support Systems, computerized decision aids, expert systems, group support systems and executive information systems. 2. To examine examples and case studies documenting computer support for organizational decision making, andvarious planning, analysis and control tasks. 3. To understand that most Decision Support Systems are designed to support rather than replace decision makers and the consequences of this perspective for designing DSS. 4. To discuss organizational and social implications of Decision Support Systems.	At the end of the course students will **CO1:** Recognize the relationship between business information needs and decision making . **CO2:** Appraise the general nature and range of decision support systems. **CO3:** Appraise issues related to the development of DSS. **CO4:** Appraise issues related to the Analyze and design. **CO5:** Understand about Group decision support systems and decision conferencing

UNIT-I: Overview of different types of decision-making: **[CO1]**
Strategic, tactical and operational. Consideration of organizational structures. Mapping of databases, MIS, EIS, KBS, expert systems OR modeling systemsand simulation, decision analytic systems onto activities within an organization. Extension to other 'non
organizational' areas of decision making. Relationship with knowledge management systems . **[8 Hrs]**

UNIT-II: Studies of human cognition in relation to decision making and the assimilation of information: **[CO2]**
Cultural issues. Implications for design of decision-making support. Communication issues.. **[8 Hrs]**

UNIT-III : Normative, descriptive and prescriptive analysis: **[CO3]**
requisite modeling. Contrast with recognition primed decision tools. **[8Hrs]**

UNIT-IV: Database, MIS, EIS, KBS, Belief nets, data mining. OR modeling tools: **[CO4]**
simulation and optimization.History, design, implementation: benefits and pitfalls. Risk assessment. Decision analysis and strategic decision support. **[8Hrs]**

UNIT-V : Group decision support systems and decision conferencing : **[CO5]**
Intelligent decision support systems: tools and applications. Cutting-edge decision support technologies. History, design, implementation: benefits and pitfalls. Deliberative e-democracy and e-participation.**[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	"Decision Sciences: an integration Perspective"	P.R. Kleindorfer, H.C. Kunreuther, P.J.H. Schoemaker	Cambridge University Press 1993
2	Decision support Systems in the 21st Century	G.M. Marakas	Prentice Hall

Reference Books:

S. No.	Title	Authors	Publisher
1	Decision support Systems and Intelligent Systems.	E. Turban and J.E. Aronson	Prentice Hall
2	Decision Support Systems,	V.S.Janakiraman and K.Sarukesi	PHI
3	Decision Support and Data Warehouse Systems,	Efrem G. Mallach	Tata McGraw-Hill.

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B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106725	Relational Database Management System	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.	Upon successful completion of this course, students should be able to: **CO1:** Describe the fundamental elements of relational database management systems **CO2:** Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. **CO3:** Design ER-models to represent simple database application scenarios **CO4:** Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data. **CO5:** Improve the database design by normalization.

UNIT-I: **[CO1]**

Database System Architecture – Data Abstraction, Data Independence, Data Definitions and Data Manipulation Languages. Data models – Entity Relationship (ER), Mapping ER Model to Relational Mode, Network. Relational and Object Oriented Data Models, Integrity Constraints and Data Manipulation Operations. **[8 Hrs]**

UNIT-II: **[CO2]**

Relation Query Languages, Relational Algebra, Tuple and Domain Relational Calculus, SQL and QBE. Relational Database Design: Domain and Data dependency, Armstrong's Axioms, Normal Forms, Dependency Preservation, Lossless design, Comparison of Oracle & DB2**[8 Hrs]**

UNIT-III : **[CO3]**

Query Processing and Optimization: Evaluation of Relational Algebra Expressions, Query Equivalence, Join strategies, Query Optimization Algorithms. **[8Hrs]**

UNIT-IV: **[CO4]**

Storage Strategies: Indices, B-Trees, Hashing, Transaction processing: Recovery and Concurrency Control, Locking and Timestamp based Schedulers, Multiversion and Optimistic Concurrency Control Schemes **[8Hrs]**

UNIT-V : Group decision support systems and decision conferencing : [CO5]
Advanced Topics: Object-Oriented and Object Relational databases. Logical Databases, Web Databases, Distributed Databases, Data Warehouse and Data Mining. **[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Database System Concepts	Sudarshan, Korth	McGraw-Hill Education
2	Fundamentals of Database System	Elmasari & Navathe	Pearson Education

Reference Books:

S. No.	Title	Authors	Publisher
1	An introduction to Database System	Bipin Desai	Galgotia Publications
2	Database System: concept, Design & Application	by S.K.Singh	(Pearson Education)
3	Database management system by	leon & leon	(Vikas publishing House).
4	Database Modeling and Design: Logical Design 4th Edition, 2005,	Toby J. Theory, Sam S. Light stone, and Tom Nadeau,	Elsevier India Publications, New Delhi

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Scheme of Teaching & Examination (Effective from 2020-2021 Batch)

B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106726	Real Time Operating Systems	L = 2	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Develop an understanding of various real-time operating system 2. Obtain a broad understanding of the technologies and applications for the emerging and exciting domain of real- time operating system 3. Get in-depth hands-on experience in designing and developing a real-time operating system.	At the end of the course students will **CO1:** Execute various commands of real-time operating system **CO2:** recognize the characteristics of a real-time operating system **CO3:** understand and develop document on an architectural design of a real-time operating system **CO4:** Handle exceptions, interrupts and use timers of real-time system **CO5:** Use and scrutinize type of various real-time operating systems according to the application

UNIT-I: Introduction: **[CO1]**

Introduction to UNIX/LINUX, Overview of Commands, File I/O,(open, create, close, lseek, read, write), Process Control (fork, vfork, exit, wait, waitpid, exec). **[8 Hrs]**

UNIT-II: Real Time Operating Systems: **[CO2]**

Brief History of OS, Defining RTOS, The Scheduler, Objects, Services, Characteristics of RTOS, defining a Task, asks States and Scheduling, Task Operations, Structure, Synchronization, Communication and Concurrency. Defining Semaphores, Operations and Use, Defining Message Queue, States, Content, Storage, Operations and Use. **[8 Hrs]**

UNIT-III : Objects, Services and I/O: **[CO3]**

Pipes, Event Registers, Signals, Other Building Blocks, Component Configuration, Basic I/O Concepts, I/O Subsystem. **[8Hrs]**

UNIT-IV: Exceptions, Interrupts and Timers: **[CO4]**

Exceptions, Interrupts, Applications, Processing of Exceptions and Spurious Interrupts, Real Time Clocks, Programmable Timers, Timer Interrupt Service Routines (ISR),Soft Timers, Operations. **[8Hrs]**

UNIT-V : Case Studies of RTOS: **[CO5]**

RT Linux, Micro C/OS-II, Vx Works, Embedded Linux, and Tiny OS.**[10Hrs]**

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Text Books:

S. No.	Title	Authors	Publisher
1	"Real Time Concepts for Embedded Systems", 2011,	Qing Li	Elsevier

Reference Books:

S. No.	Title	Authors	Publisher
1	"Embedded Systems- Architecture, Programming, and Design", 2007	Rajkamal	TMH
2	"Advanced UNIX Programming", 2006, 2nd Edition	W. Richard Stevens, Stephan A. Rago,	Pearson.
3	"Embedded Linux: Hardware, Software and Interfacing", 2008, 1st Edition,	Dr. Craig Hollabaugh,	Pearson

SYLLABUS (Open Elective Course -II)

B.TECH. (INFORMATION TECHNOLOGY)

SEVENTH SEMESTER

B. Tech. (Information Technology) Seventh Semester

Table -V [Open Elective Course -II]

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Credits
1	**Information Technology**	**Introduction to Data Science**	IT106741	**3**
2	Information Technology	E-Commerce & strategic IT	IT106742	3

B. Tech. (Information Technology) Seventh Semester

Subject Code: IT106741	Introduction to Data Science	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	Lab Period
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. Incorporate data science principles to address data-dependent questions in the humanities, social sciences, and sciences. 2. Apply basic exploratory analysis to identify abnormalities in data (i.e., missing values, outliers, redundant features, etc.) 3. Anticipate and identify ways in which sampled data may be biased 4. Prepare data sufficient for answering a range of research questions across liberal arts disciplines	Upon course completion, a student will be able to: **CO1:** Identify and describe the methods and techniques commonly used in data science. **CO2:** Demonstrate proficiency with the methods and techniques for obtaining, organizing, exploring, and analyzing data. **CO3:** Recognize how data analysis, inferential statistics, modeling, machine learning, and statistical computing can be utilized in an integrated capacity. **CO4:** Create and modify customizable tools for data analysis and visualization per the evaluation of characteristics of the data and the nature of the analysis. **CO5:** Demonstrate the ability to clean and prepare data for analysis and assemble data from a variety of sources.

UNIT-I: Introduction: **[CO1]**
Introduction to Data Science , Evolution of Data Science ,Data Science Roles,Stages in a Data Science Project , Applications of Data Science in various fields , Data Security Issues. **[8Hrs]**

UNIT-II: Data Collection and Data Pre-Processing: **[CO2]**
Data Collection Strategies, Data Pre- ProcessingOverview, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization.**[8 Hrs]**

UNIT-III : Exploratory Data Analytics: **[CO3]**
Descriptive Statistics, Mean, Standard Deviation, Skewness andKurtosis, Box Plots, Pivot Table, Heat Map, Correlation Statistics, ANOVA. **[8Hrs]**

UNIT-IV: Model Development: **[CO4]**
Simple and Multiple Regression, Model Evaluation using Visualization, Residual Plot,

Distribution Plot, Polynomial Regression and Pipelines, Measures for In-sample Evaluation, Prediction and Decision Making. **[8Hrs]**

UNIT-V : Model Evaluation: **[CO5]**
Generalization Error, Out-of-Sample Evaluation Metrics, Cross Validation, Over fitting, Under Fitting and Model Selection, Prediction by using Ridge Regression, Testing Multiple Parameters by using Grid Search. **[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	Doing Data Science	Cathy O'Neil and Rachel Schutt	O'Reilly, 2015

Reference Books:

S. No.	Title	Authors	Publisher
1	Smarter Decisions: The Intersection of IoT and Data Science	Jojo Moolayil	PACKT, 2016
2.	Data Science and Big data Analytics	David Dietrich, Barry Heller, Beibei Yang	EMC 2013
3.	Handbook of Research on Cloud Infrastructures for Big Data Analytics	Raj, Pethuru	IGI Global

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B. Tech. (Information Technology) Seventh Semester

Subject Code :- IT106742	E –Commerce & Strategic IT	L = 3	T = 0	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objective	Course Outcomes
1. This course provides an introduction to information systems for business and management. 2. It is designed to familiarize students with organizational and managerial foundations of systems. 3. The technical foundation for understanding information systems.	After successful completion of this course, the students will be able to: **CO1:** Apply the knowledge and skills of heuristic search and game playing for solving real time problems **CO2:** Make decisions based on which knowledge representation to use **CO3:** Ability to work with Natural Languages and implement linear and nonlinear planning **CO4:** Apply suitable Bayesian decision theory for various types of learning problems **CO5:**Develop learning models and required solutions for Multivariate datasets.

UNIT-I: **[CO1]**

Electronic Commerce Environment and Opportunities: Background, the Electronic Commerce Environment, Electronic Marketplace Technologies. Modes of Electronic Commerce: Electronic Data Interchange, Migration to Open EDI, Electronic Commerce with www/Internet, Commerce Net Advocacy, web Commerce Going Forward**[8 Hrs]**

UNIT-II: **[CO2]**

Approaches to Safe Electronic Commerce: Secure Transport Protocols, Secure Transactions, Secure Electronic Payment Protocol (SEPP), Secure Electronic Transaction (SET), Certificates for authentication Security on web Servers and Enterprise Networks. Electronic Cash and Electronic Payment Schemes: Internet Monetary Payment & Security Requirements. Payment and Purchase Order Process, On-line Electronic cash. . **[8 Hrs]**

UNIT-III : **[CO3]**

Internet/Intranet Security Issues and Solutions: The need for Computer Security, Specific Intruder Approaches, Security Strategies, Security Tools, Encryption, Enterprise Networking and Access to the Internet, Antivirus Programs, Security Teams. **[8Hrs]**

UNIT-IV: **[CO4]**

Master Card/Visa Secure Electronic Transaction: Introduction, Business Requirements, Concepts, payment Processing. E-Mail and Secure Email Technologies for Electronic Commerce: Introduction, The Means of Distribution, A model for Message Handling, E-mail working, Multipurpose Internet Mail Extensions, Message Object Security Server. **[8Hrs]**

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UNIT-V : **[CO5]**

Internet Resources for Commerce: Introduction, Technologies for web Servers, Internet Tools Relevant to Commerce, Internet Applications for Commerce, Internet Charges, Internet Access and Architecture, Searching the Internet. Advertising on Internet: Issues and Technologies. Introduction, Advertising on the Web, Marketing creating web site, Electronic Publishing Issues, Approaches and Technologies: EP and web based EP. **[10Hrs]**

Text Books:

S. No.	Title	Authors	Publisher
1	"Web Commerce Technology Handbook	Daniel Minoli, Emma Minoli,	McGraw-Hill
2	Frontiers of electronic commerce	Galgotia	

Reference Books:

S. No.	Title	Authors	Publisher
1	E-Commerce fundamentals and applications	Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chan	